BUILDING A GRAPE AND WINE INDUSTRY ON MISSOURI PIONEERS; LESSONS LEARNED AND APPLICATIONS TO THE FUTURE

UNIVERSITY OF NEBRASKA
VITICULTURE PROGRAM WORKSHOP
OCTOBER 19, 2019

Dean S. Volenberg
Viticulture and Winery Operations Extension Specialist
University of Missouri Grape and Wine Institute
volenbergd@missouri.edu
The Phylloxera epidemic in France in mid 19th century
Charles Valentine Riley, first state entomologist for Missouri confirmed Phylloxera as the causative agent
Cane wood of native American Vitis spp. sent to France to serve as rootstocks for V. vinifera cultivars
Missouri has 6 native grape species; V. aestivalis, V. cinerea, V. palmata, V. riparia, V. rupestris, and V. vulpina
First rootstocks were V. riparia, V. rupestris

ADVENT OF ROOTSTOCKS
CHARLES VALENTINE RILEY

- First state entomologist for Missouri 1878
- Observed that native North American grapes resistant to grape phylloxera
- Received French Grand Gold Medal and named Chevalier of the Legion of Honor 1884
American Grape Growing and Winemaking 1880

Sent millions of cuttings of Taylor (V. riparia), Concord (V. labrusca), Clinton (V. labrusca x Vitis riparia), Lenoir (V. vinifera 69%, V. berlandieri 21%, V. rupestris 7%, V. riparia 3%), Cunningham (V. aestivalis bourquiniana), Herbemont (V. aestivalis bourquiniana), Elvira (V. riparia x V. labrusca), Norton (V. aestivalis x V. labrusca)

Husmann’s ethnicity is speculated to have excluded him from receiving a medal from the French government

First professor of Pomology and Forestry at the University of Missouri 1879

Considered one of the Fathers of the California grape and wine industry

GEORGE HUSMANN
Grape grower and winemaker in Neosho, Missouri

Grape breeder of which Jaeger 70 remains an important selection

Received French Grand Gold Medal and named Chevalier of the Legion of Honor 1884
Author “School for American Grape Culture (1859)

One of the first books on grape culture and winemaking

Settled in Hermann, MO

FRIEDRICH MÜNCH

https://babel.hathitrust.org/cgi/pt?id=nyp.33433006718088&view=1up&seq=5
Established the nursery Isador Bush and Co. in 1870
Settled in Bushberg, MO Jefferson County
Bushberg Catalogue described grape growing, pest management and cultivar descriptions

ISADOR BUSH
“Notes on the Grape-vines of Missouri” 1860

Collaborated with C.V. Riley on Phylloxera 1872

Helped establish MO Botanical Garden and became chief scientific advisor in 1859

Settled in St. Louis
Grape breeder in Denison, Texas
Provided Texas rootstocks to France
Received French Grand Gold Medal and named Chevalier of the Legion of Honor 1884
Foundations of American Grape Culture 1909

THOMAS VOLNEY MUNSON
1904 approximately 11,000 acres of grapes in Hermann, MO
2016 there are approximately 1,800 acres of grapes in MO
1840’s Isabella, Norton/Cynthiana, Catawba and Delaware introduced to MO
Today Norton, Vignoles, Chambourcin, Vidal blanc, Concord….
1870’s The winery (Michael Poeschel) today named Stone Hill shipped 1.25 million gallons of wine
2016 there were 130+ wineries in MO with 1.2 gallons sold annually

THE PAST AND FUTURE
Governor Bob Holden designates Norton as the state grape of Missouri in 2003

When Norton is quickly pressed

"On touching the tongue is announces itself as the fiery product of a hotter sun, and operates as an elixir of life about the environs of the heart"

- Friedrich Münch, page 104 in “School for American Grape Culture” (1859)
Augusta - 1980
Hermann - 1983
Ozark Mountain - (Missouri, Arkansas and Oklahoma)
Ozark Highland - 1987

MISSOURI AVA
George Husmann and Hermann Jaegger realized native grapes would be the foundation of the MO wine industry.

Whereas other states kept planting old world cultivars without success.

Today MO has rebuilt their grape and wine industry on hybrids, French American hybrids, American heritage cultivars.

Resilient cultivars versus nonelastic cultivars.

Where are the *Vitis vinifera*?
Many planted *V. vinifera*
- C.V. Riley and root phylloxera
- Common thought was to adapt *V. vinifera* over generations to the climate and soils
- Failure

“...DOING THE SAME THING OVER AND OVER AGAIN AND EXPECTING DIFFERENT RESULTS” – ALBERT EINSTEIN
Isador Bush & Co established 1870, Jefferson County, MO

American Grape Vines A Grape Growers Manual 1883

Isador Bush
“Some, however, say that American wines are very inferior, “scarcely fit to drink”! This was the preconceived opinion of foreigners and great many of Americans too; also, most American hotels and restaurants keep none but foreign wines—or else native wines under foreign names and labels…”

-American Grape Vines A Growers Manual 1883

AFTER 138 YEARS
Grape culture prior to:
- Pyrethrum and soap 1850’s
- Sulfur 1850’s
- Paris Green 1867 Copper arsenite
- Bordeaux mixture 1885 Copper sulfate and lime
- Dithiocarbamate fungicides ~1915

ORGANIC GRAPE PRODUCTION
IDEA FOR ORGANIC GRAPE PRODUCTION

1. Select cultivars introduced prior to 1900
   - Example Elvira (Seedling of Taylor) - problem with splitting skins
     1. Plant seeds of progeny and make selections
     2. Etta was progeny of Elvira without splitting skins
2. Example Hermann - Seedling of Norton progeny
   1. Long 9” clusters
   2. Progeny of Hermann a white berried seedling
RESISTANCE TO BLACK ROT

- Norton
- Delaware
- Norton, Cynthiana, Norton’s Virginia
- Concord, Hartford, Ives, Perkins, Champion, Cottage, North Carolina, Rentz and Venango
- Elvira, Missouri Riesling (Taylor seedling), Monteflore, Noah, Taylor

RESISTANCE TO MILDEW
Old World Vines V. vinifera susceptible to the root form of Phylloxera

In America, C.V. Riley evaluated roots of V. vinifera in Hermann, MO and found the root form of Phylloxera

In America, main concern was the foliar form of Phylloxera

Concern was root Phylloxera
“By the end of September the galls (leaf) are mostly deserted and those which are left appear as if infected with mildew, eventually turn brown and decay”

- Grape manual 1883, p. 53
A) Upper or adaxial leaf surface of *Vitis*

B) Upper or adaxial leaf surface of *Vitis* infected with foliar phylloxera

Nabity, P. D. et al. 2013. Leaf-galling phylloxera on grapes reprograms host metabolism and morphology. PNAS
FOLIAR PHYLLIXERA AND DOWNY MILDEW
Soil not limiting factor of grape growing
  - Importance of matching grape cultivar to soil and climate
  - Climatic conditions of site impact success or failure
    - Unfavorable sites cannot be overcome by management of vines
    - Heavy dews promote mildews and rots
Grape cultivars that perform well in one geographical location will not be a universal success in all locales of the world
Grape cultivars that are successful in a location likely have some native grape from the area in their genetic background